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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,470	08/06/2001	Edward J. Grenchus JR.	END920010061US1	1539

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EXAMINER	
ROBERTSON, DAVID	
ART UNIT	PAPER NUMBER
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/923,470	GRENCHUS ET AL.	
	Examiner	Art Unit	
	Dave Robertson	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-15 and 19-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-15 and 19-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/16/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant amends claims 1, 14, 19, and 32 Claims 1, 3-15, and 19-32 are pending.

Response to Arguments

2. Applicant's arguments filed 01/16/2007 have been fully considered and are persuasive. Prior rejections of all claims pending under 35 U.S.C. 101 and 35 U.S.C. 112(1) have been withdrawn finding support in the specification or in co-filed application 09/524,366 to Grenchus (positively incorporated by reference), and finding support within the level of ordinary skill in the art at the time of invention for the issues raised and replied. A new, non-final Office Action on the merits is prepared herein.

Claim Objections

3. The numbering of claims is not in accordance with 37 CFR 1.126. When claims are canceled, all claims depending from the canceled claim must be canceled or be amended as independent or dependent from a non-canceled claim. In the claims submitted 01/16/2007 (presently examined), claims 4, 5, 7 and 8 depend directly or indirectly from claim 2 now canceled. For the purposes of examination, based on a review of original claim 2 and the present claims 1-8, claims 4 and 7 will be assumed to depend on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3-5, 7, 8, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grenchus et al ("Demanufacturing of Information Technology Equipment" in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs 157-160) in view of Fields et al (US Pat. 5,111,391) and further in view of Suzuki et al (US Pat. 6,226,617).

In a series of published articles from 1997 continuing into the year of application of the present invention (2001), Grenchus et al, all of IBM and inventors of the present application, disclose the developments and improvements to IBM's electronics demanufacturing processes reporting success in reutilization of materials in pounds of equipment and parts and in dollars saved. Other evidence shows that demanufacturing was increasingly recognized as a manufacturing process itself with manufacturing planning processes applied, again, to manufacturing design thru reuse, recycling and disposal of product and their component parts. Suzuki, for example, discloses product disposal system including methods for assessing complexity and cost based on weight and volume, and selecting and monitoring processes for "treatments" of discarded manufactured articles. Also during this period, 1997 to 2001, there appeared renewed research interest in product disposal and recovery technologies across the life-cycle of

the products reaching from product design to product disposal. See Sandborn and Murphy and Lee and Ishii and numerous other research papers in cited art.

From the prior art, taken as a whole, notwithstanding the significant contribution to the body of prior art in demanufacturing technologies on the part of the inventors of the present application (numerous articles identified on inventors' IDS), it would appear that a broadest reasonable interpretation of the claims of the present application is rendered obvious by the prior art of record. Specifically, with respect to prior art applied:

Claim 1

Grenchus teaches determining a projected volume of material for processing (see page 158, Part IV. Receipt, *Advanced Ship Notice*); determining a complexity factor for the demanufacturing processing (see page 157, paragraph top of right column, "It is staffed on 2 shifts and has an annual capacity of approximately 40 million pounds based on product mix and machine complexity."); however, Grenchus does not expressly teach a complexity factor representing processing time divided by projected volume.

It is old and well known in the art of manufacturing product disassembly and disposal that processing time (T), times unit volume (V), and complexity of processing of a unit of volume (C) are directly related (i.e. C x V = T), and that using such relation leads to better estimates of the time required to process or, in this discussion, *de-process* a manufactured product. Suzuki, for example, teaches assessing disassembly and segregation time based on complexity and volume (see column 3 from line 10,

"...time taken for treatment of the article...on the basis of dimension or alternatively weight of the article...", and see column 11 from line 65 to column 12, service time of each facility multiplied with the treatment cost per unit time). Suzuki teaches extensively that the complexity of the separation procedures determines time, cost and means of processing; that is, treatments involving statutory regulations or standards and harmful or hazardous materials (see column 15 from line 60 through column 16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention that "machine complexity" as taught by Grenchus would be a factor in determining the time (and cost) to demanufacture a product, and that a volume of product to be demanufactured multiplied by its complexity per unit would result in a *more accurate estimation* of the total time to disassemble, reuse, recycle, or dispose of the product.

Grenchus, further teaches

identifying work content and resulting saleable, commodity, and trash items (see page 157, Figure 1, box SORT, showing sorting bins for External Reuse, Internal Reuse, Recycle, and Landfill, and specific mention of *commodities* as an output of machine teardown (page 160, Part IX. B.);

dismantling prototype machines (see page 160, Part IX. B in "Complete machine type analysis for tear down, commodity recovery, and part reuse is routinely examined by engineering. A designated team of engineers and technicians tear apart and classify contents to maximize reuse and recovery of incoming machines and commodities."). Taken together, with the teaching of capacity based on machine complexity (page 157),

that engineering teams perform an analysis of machines by tear down, and further teaching that machine analysis is performed to meet the challenge of Product, Material, and Other issues, including *level of tear-down for optimal recovery* (see page 157, Part IX. Common issues:...Other...), fairly teaches, by definition, that a *prototyping* step is included in the published process.

While Grenchus suggests determining staffing requirements based on complexity (page 157, "staffed on 2 shifts and has annual capacity based on ...machine complexity") and assigning specifically skilled workers to the disassembly line (see page 159 Part VII. B.); however, Grenchus does not expressly teach determining staffing requirements and productivity targets for a demanufacturing enterprise.

It is old and well known in the art of staff schedule to determine staffing requirements based on personnel resources, skills, and demand for a given skill level, and to set productivity targets for the enterprise. Fields, for example, teaches identifying and assigning specifically skilled workers to a schedule based on tasks to be performed, skill level required, historical data about the facility, tasks, and skill, to optimize a schedule taking into account personnel matters such as days off. It would have been obvious to one of ordinary skill in the art at the time of the invention that staffing for a demanufacturing process, suggested by Grenchus as related to capacity and machine complexity (page 157) and improved by having expert sorters (page 159), based on volume (numbers of staff needed) and complexity (skills for tasks needed) would have provided an optimal allocation of human resources and minimized time and costs, and improved quality of the demanufacturing process.

Claim 3

For reasons given above in claim 1, Grenchus suggests, and in view of Suzuki, teaches converting volume to weight or weight to volume (on the basis of dimensions or weight (Suzuki, column 3 from line 12).

Claims 4 and 5

Glenchus in view of Suzuki teaches or suggest converting of weight and volume as a measure of demanufacturing staffing requirement (as above in claim 3), and determining a complexity factor by disassembly prototyping (as explained above in claim 1, element dismantling prototype machines).

Claim 7

Glenchus in view of Suzuki teaches or suggests projecting volume by truckload (see page 158, Part IV. Customer completes and *Advanced Ship Notice* as a solution to "typical problems with shipments...the inability to identify who sent the truckload of material."). Taken as a whole, Glenchus teaches that customer shipments of articles to be demanufactured arrived by truckload, and Suzuki teaches that time to process is estimated by volume (or weight). It is old and well known in the art that a truckload is a delivery means and a unit measure of delivered materials, measured by both volume and weight, depending on the convenience of the measure compared to the information available (from a truck scale or from a bill of lading). Therefore, it would have been obvious to one of ordinary skill in the art of the invention to project volume of a customer shipment by truckload as this would have been known to be a unit of measure directly

related to well known means of shipping materials, thus accurately projecting the volume of materials delivered to be processed in the demanufacturing operation.

Claim 8

Grenchus teaches disassembly prototyping including the step of determining salvageable and disposable content (see elements of claims 1 dismantling prototype machines and identifying work content and resulting saleable, commodity, and trash items).

Claims 14 and 15

As above for elements of claims 10-13 corresponding to the elements of claims 14 and 15, the claims are similarly rejected for reasons given above, including the feature of Fields in creating a Daily Schedule (Figure 3) encompassing staffing requirements for all customers (a summation) and using a computer spreadsheet to do the planning (see Fields, Figure 3).

Claims 19-23, 25 and 26 recite a program storage device for performing the method of claims 1, 3-5, 7, and 8 and are similarly rejected for reasons given above.

9. Claims 6 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grenchus et al ("Demanufacturing of Information Technology Equipment" in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs 157-160) in view of Fields et al (US Pat. 5,111,391) and further in view of Suzuki et al (US Pat. 6,226,617), all as applied to claim 5 above, and further in view of Lee and Ishii ("Demanufacturing Complexity Metrics in Design for

Recyclability" in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs 19-24).

Claim 6

Glenchus teaches or suggests accumulating historical data (see page 157, "feed forward disassembly techniques, advances, problems, or concerns for future product design improvements"), however, Glenchus does not expressly teach factoring this historical data into the complexity factor. Lee and Ishii among others discloses the prototyping of a product disassembly process to determine the complexity and cost associated with the demanufacturing process, and specifically the "tracking of DFR (Design For Reuse) redesigns over the history of a product platform. Taken together, Glenchus suggests, and Lee and Ishii teaches, accumulating historical data for determining complexity factor from previously disassembled material, the combination leading to better designs, potentially lower complexity factor for a product, and therefore lower overall cost of demanufacturing.

Claim 24 recites a program storage device for performing the method of claim 6 and is similarly rejected for reasons given above.

10. Claims 9-13 and 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grenchus et al ("Demanufacturing of Information Technology Equipment" in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs 157-160) in view of Fields et al (US Pat. 5,111,391)

and further in view of Suzuki et al (US Pat. 6,226,617), as applied to claim 1 above, and further in view of Yuri et al (US Pat. 6,249,715).

Claim 9

Glenchus teaches or suggests staffing requirements based on volume projections and complexity factors, and suggests the demanufacturing process as a reverse manufacturing process using manufacturing assembly lines (see page 158 "Staging" and "Disassembly"); however, Glenchus does not expressly teach a workload planning model also determining resource balancing.

It is old and well known in the art of manufacturing to plan manufacturing with resources balanced according to volume and complexity, so that each resource is optimally used for increased overall utilization and throughput. Yuri et al, for example, teaches optimizing work distribution according to time variation factors based on the work difficulty (i.e. the complexity) and the skill level of the workforce. It would have been obvious to one of ordinary skill in the art at the time of invention to employ such a planning method to balance the workload of assembly lines operating under the teachings of Glenchus for demanufacturing, as demanufacturing is a reverse manufacturing process involving assembly lines, and balancing those assembly lines according to complexity and skill would have resulted in increased utilization, throughput, and ultimately reduced overall costs per volume processed.

Claim 10

Glenchus in view of Fields teaches or suggests staffing according to the demanufacturing process needs, including employee availability (see Fields, Abstract).

By definition of the terms in the art, employee availability (to work on a task) is directly dependent on absenteeism, fatigue, breaks, and vacation patterns (see at least Fields column 5, "Optimize Schedule by Shifts and Breaks").

Claims 11 and 12

Glenchus in view of Fields teaches or suggests staffing according to the demanufacturing process needs, including staff requirements planning based on sudden increased demand (see Fields, column 5 under "Schedule Optimization Phase") and using a computer spreadsheet to do the planning (see Figure 3).

Claim 13

Glenchus in view of Yuri, as above in claim 9, teaches planning an optimal balanced work distribution plan, which is a plan with a productivity target of completing the planned work in the time and with the resources allocated.

Claims 27-31 recite a program storage device for performing the method of claims 9-13 and are similarly rejected for reasons given above.

Claim 32 recites a computer program product for performing the method of claim 31 and is similarly rejected for reasons given above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dave Robertson whose telephone number is 571-272-8220. The examiner can normally be reached on 8:15am to 5:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

dcr

Lorraine Jeanty
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